

Spec	ificatior	for A	oprov	val
	Date: 20	014/03/12		
	Customer :	東莞臺慶		
тт	AI-TECH P/N: HPC40	18F-SERIES		
	USTOMER P/N:			
	ESCRIPTION:			
	UANTITY:	pcs		
REMAR	К:			
	Customer App	proval Feedback		
	西北臺慶科胡 <u>TAI-TECH Advance</u>			
■ 西北臺慶科技股份有限公司 TAI-TECH Advanced Electronics <u>Headquarter:</u> NO.1 YOU 4TH ROAD, YOUTH INDUSTR		Sales Dep.		
TAO-YUAN HSIEN, TAIWAN, R.O.C. TEL: +886-3-4641148 FAX: +886-3-464 http://www.tai-tech.com.tw	3565	APPROVED	CHECKED	
E-mail: sales@tai-tech.com.tw □ 東莞臺慶精密電子有限公司 DONGGUAN TAI-TECH ADVANCEI IFIGANG MANAGEMENT DISTRICT, HU GUANGDONG, CHINA TEL: +86-769-3365488 FAX: +86-769-33 E-mail: sales@tai-tech.net	ANGJIANG, DONGGUAN,	姜佩蓉 Little Jiang	姜佩蓉 Little Jiang	
Office: 金亨國際有限公司		R&D Center		
並了國际有限公司 KAMHENG INTERNATIONAL LI TEL: +86-852-25772033 FAX: +86-852-2		APPROVED	CHECKED	DRAWN
□ 臺慶精密電子(昆山)有限公司 TAI-TECH ADVANCED ELECTRON SHINWHA ROAD, KUNJIA HI-TECH INDU JIANG-SU, CHINA TEL: +86-512-57619396 FAX: +86-512-5 E-mail: sales@tai-tech.cn	STRIAL PARK, KUN-SHAN,	楊祥忠 Mikey Yang	詹偉特 Jack Chan	徐允珮 Shelly Hsu
Office: 北欣國際有限公司 NORTH STAR INTERNATIONAL TEL: +86-512-57619396 FAX: +86-512-5				

Power Inductor

HPC4018F-SERIES

	ECN HISTORY LIST							
REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN			
1.0	14/03/12	新 發 行	楊祥忠	詹偉特	徐允珮			
備								
詿								

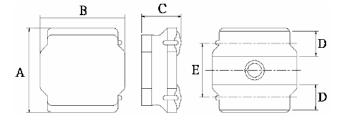
Power Inductor

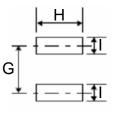
HPC4018F-SERIES

1. Features

- 1. This specification applies Low Profile Power Inductors.
- 2. 100% Lead(Pb) & Halogen-Free and RoHS compliant.

2. Dimension





Halogen-free

Series	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	G(mm)	H(mm)	l(mm)
HPC4018F	4.0±0.2	4.0±0.2	1.8 max.	1.1±0.2	2.5±0.2	2.8 ref.	3.7 ref.	1.2 ref.
								Units: mm

3. Part Numbering

HPC	4018	F	-	2R2	Μ
А	В	С		D	Е
A: Series					
B: Dimension					
C: Control S/N					
D: Inductance		2R2	=2.2uł	4	
E: Inductance To	olerance	M=±	20%;	Y=±30%	

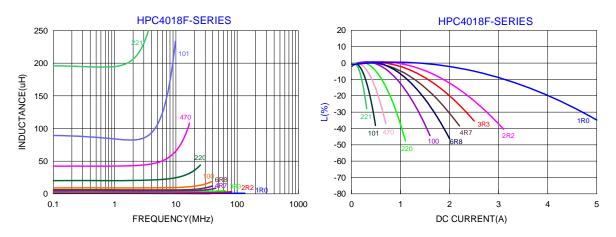
4. Specification

TAI-TECH Part Number	Inductance (uH)	Tolerance (%)	Test Frequency (Hz)	SRF (MHz) min.	DCR (Ω) ±20%	l sat (A)	l rms (A)
HPC4018F-1R0Y	1.0	±30%	1V100K	80	0.030	4.00	1.83
HPC4018F-2R2M	2.2	±20%	1V100K	52	0.060	2.70	1.44
HPC4018F-3R3M	3.3	±20%	1V100K	44	0.070	2.00	1.23
HPC4018F-4R7M	4.7	±20%	1V100K	34	0.090	1.70	1.20
HPC4018F-6R8M	6.8	±20%	1V100K	29	0.110	1.45	1.060
HPC4018F-100M	10	±20%	1V100K	24	0.180	1.20	0.84
HPC4018F-150M	15	±20%	1V100K	19	0.250	0.94	0.65
HPC4018F-220M	22	±20%	1V100K	16	0.360	0.80	0.59
HPC4018F-330M	33	±20%	1V100K	12	0.530	0.65	0.49
HPC4018F-470M	47	±20%	1V100K	10	0.650	0.57	0.42
HPC4018F-680M	68	±20%	1V100K	8.3	1.00	0.47	0.32
HPC4018F-101M	100	±20%	1V100K	6.5	1.50	0.40	0.27
HPC4018F-151M	150	±20%	1V100K	5.5	2.50	0.31	0.22
HPC4018F-221M	220	±20%	1V100K	4.0	4.00	0.27	0.17

Note:

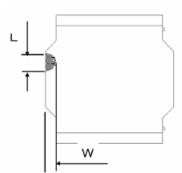
lsat : Based on inductance change $~~(\bigtriangleup L/L0$: $\leqq \text{-30\%}\,)$ @ ambient temp. 25 $^\circ\!\!\mathbb{C}$

Irms : Based on temperature rise $(\triangle T : 40^{\circ}C \text{ typ.})$



Core chipping

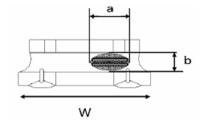
The appearance standard of the chipping size on top side, and bottom side ferrite core is listed below.



Туре	L	w
HPC4018F	1.5mm Max.	1.5mm Max.

Void appearance tolerance Limit

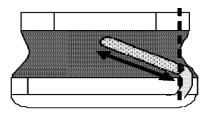
Size of voids occurring to coating resin is specified below.



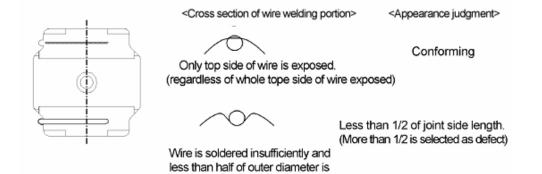
Exposed wire tolerance limit of coating resin part on product side. Size of exposed wire occurring to coating resin is specified below.

- 1. Width direction (dimension a): Acceptable when $a \leq w/2$
- Nonconforming when a > w/22. Length direction (dimension b): Dimension b is not specified.
- 3. The total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, and is acceptable.

External appearance criterion for exposed wire Exposed end of the winding wire at the secondary side should be 2mm and below.

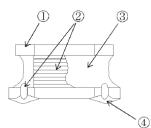


5. Exectrde appearance criterion for exposed wire



covered with solder.

6. Material List



No.	Item	Material
1	Core	Ni-Zn ferrite
2	Wire	Copper Wire
3	Coating	Epoxy with magnetic
4	Solder	Lead free

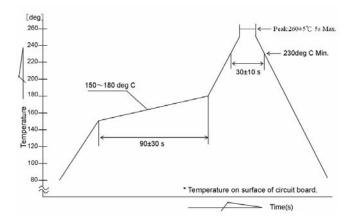
7. Reliability and Test Condition

Item	Performance	Test Method and Remarks
Operating Temperature	- 25 ~ +120℃.	Including self-generated heat
Storage Temperature	-40 ~ +85 $^{\circ}$ C. - 5 to 40 $^{\circ}$ C for the product with taping.	
Rated current		
Inductance (L)	Within the specified tolerance	LCR Meter: HP 4285A or equivalent, 100kHz, 1V
DC Resistance		DC Ohmmeter: HIOKI3227 or equivalent
Temperature characteristics	Inductance change : Within±20%	Measurement of inductance shall be taken at temperature rang within–25°C to +85°C. With reference to inductance value at+20 °C,change rate shall be calculated. Measurement of inductance shall be taken at temperature rang within–40°C to +125°C. With reference to inductance value at+20 °C,change rate shall be calculated.
Resistance to flexure substrate	No damage.	The test samples shall be soldered to the testing board by the reflow. As illustrated below, apply force in the direction of the arrow indicating until deflection of the test board reaches to 2mm. Force 10 Force 10
Adhesion of Terminal electrode	Shall not come off PC board.	The test samples shall be soldered to the testing board and by the reflow. 10 N, 5 s Applied force : 10 N to X and Y directions. Duration : 5s Solder cream thickness : 0.15

TAI-TECH

Item	Performance		Test Method and R	emarks	
Resistance to Vibration	Inductance change : Within±10% No abnormality observed in appearance.	reflow. Then it shall b Frequency: 10 Total Amplitud 196m/S2) Sweeping Me Time : 2 hour Recovery: At	bles shall be soldered to be submitted to below to 0-55Hz de: 1.5mm (May not exit thod:10Hz to 55Hz to s each in X,Y, and Z D least 2hrs of recovery r the test, followed by t	est conditions. ceed acceleration 10Hz for 1min. Direction. under the standar	n
Solderability	At least 90% of surface of terminal electrode is covered by new solder.	in molten sold Flux : methan Solder temper Time: 5±1.0 s	bles shall be dipped in er as shown in below. ol solution containing rature: 245±5℃ ec. pth: All sides of mount	rosin 25%	
Resistance to soldering		for 40 second seconds,2 tim Test board thi	ble shall be exposed to s, with peak temperatu es. ckness: 1.0mm aterial: glass epoxy-res	ure at 260±5℃ for	
Thermal shock		reflow. The test samp for specified to sequence.	bles shall be soldered to bles shall be placed at me by step 1 to step 4 ure cycles shall be rep Temperature(C) -40±3°C Room Temp 85±2°C Room Temp	specified tempera	ature in
Damp heat life test	Inductance change : Within±10%	Test Method and Remarks The test samples shall be soldered to the test board by the reflow. The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below. Temperature: 40±2℃ Humidity: 90-95%RH Time: 504±8 hrs.			
Loading under damp heat life test	No abnormality observed in appearance.	The test samples shall be soldered to the test board by the reflow. The test samples shall be placed in thermostatic oven set specified temperature and humidity and applied the rated current continuously as shown in below. Temperature: 60±2°C Humidity: 90-95%RH Applied current: Rated current Time: 500+24/-0 hrs			
Low temperature life test		The test samples shall be soldered to the test board by the reflow. After that, the test samples shall be placed at test conditions as shown in below. Temperature:- $40\pm2^{\circ}$ C Time: 500 ±8 hrs.			
Loading at high temperature life test		reflow. Temperature:	nt: Rated current	to the test board b	by the

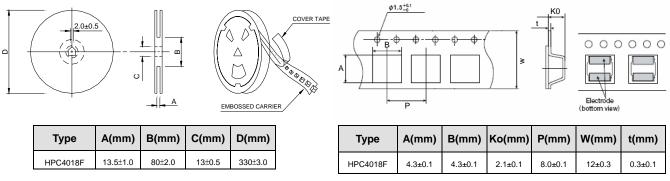
TAI-TECH 8. Soldering



9. Packaging Information

(1) Reel Dimension

(2) Tape Dimension



(3) Packaging Quantity

Туре	Chip / Reel
HPC4018F	3500

Application Notice

Storage Conditions

- To maintain the solderability of terminal electrodes:
- 1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
- 2. Temperature and humidity conditions: Less than 40 $^\circ\!{\rm C}$ and 60% RH.
- 3. Recommended products should be used within 12 months form the time of delivery.
- 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
- 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
- 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.





測試報告

號碼(No.) : CE/2013/C5949 日期(Date) : 2014/01/07 頁數(Page) : 1 of 12

Test Report

西北臺慶科技股份有限公司 / TAI-TECH ADVANCED ELECTRONICS CO., LTD.

(東莞臺慶精密電子有限公司 / TAI-TECH ADVANCED ELECTRONICS (DONGGUAN) CO. LTD.)

(臺慶精密電子(昆山)有限公司 / TAI-TECH ADVANCED ELECTRONICS (KUN-SHAN) CO. LTD.)

(耀鑽科技股份有限公司 / YOSONIC TECHNOLOGY CO., LTD.)

桃園縣楊梅市幼獅工業區幼四路1號 / NO. 1, YOU 4TH ROAD, YOUTH INDUSTRIAL DISTRICT, YANG-MEI CITY, TAO-YUAN HSIEN. TAIWAN R. O. C.

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(江蘇省昆山市篷朗昆嘉高科技工業區郭澤路 / GUO-ZE ROAD, KUNJIA HI-TECH INDUSTRIAL PARK, KUN-SHAN, JIANG-SU, CHINA)

(桃園縣中壢市中壢工業區長春六路15號 / NO. 15, CHANGCHUN 6TH RD., JHONGLI CITY, TAOYUAN COUNTY 320, TAIWAN (R. O. C.))

以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as):

樣品名稱(Sample Description)	:	SMD POWER INDUCTOR
樣品型號(Style/Item No.)	;	HPC, MDC, FPC, FWP, SPC, SPI, UHP, DFP, TLPC, TLPH, TLI SERIES
收件日期(Sample Receiving Date)	:	2013/12/30
測試期問(Testing Period)	:	2013/12/30 TO 2014/01/07
	===:	

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).



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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 2 of 12

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<u>測試結果(Test Results)</u>

測試部位(PART NAME)No.1 : 整體混測 (MIXED ALL PARTS)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5: 2013方法, 以感應耦合 電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5: 2013方法, 以感應耦合 電漿原子發射光譜儀檢測, / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.
汞 / Mercury (Hg)	mg/kg	参考IEC 62321-4: 2013方法,以感應耦合 電漿原子發射光譜儀檢測,/With reference to IEC 62321-4: 2013 and performed by ICP-AES.	2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321: 2008方法, 以UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.

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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 3 of 12

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	参考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二(2-乙基己基)酯 / DEHP(Di-(2-ethylhexyl) phthalate)(CAS No.: 117-81-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二異癸酯 / DIDP (Di- isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
鄰苯二甲酸二異壬酯 / DINP (Di- isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0)	%	参考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
鄰苯二甲酸二正辛酯 / DNOP (Di-n- octyl phthalate) (CAS No.: 117- 84-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二異丁酯 / DIBP (Di- isobutyl phthalate) (CAS No.: 84- 69-5)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372, Analysis was performed by GC/MS.	0.003	n.d.

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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 4 of 12

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1
六溴環十二烷及所有主要被辨别出的 異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α - HBCDD, β - HBCDD, γ - HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考IEC 62321: 2008方法,以氣相層析/質 譜儀檢測. / With reference to IEC 62321: 2008 method. Analysis was performed by GC/MS.	5	n.d.
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法,以氣相層析/質 譜儀檢測./With reference to IEC	-	n.d.
一溴哪苯 / Monobromobiphenyl	mg/kg		5	n.d.
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n.d.
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n.d.
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n.d.
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n.d.
六溴聯苯 / Hexabromobiphenyl	mg/kg	62321: 2008 and performed by GC/MS.	5	n.d.
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n.d.
へ溴聯苯 / Octabromobiphenyl	mg/kg		5	n.d.
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n.d.
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n.d.

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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 5 of 12

Test Report

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(耀鑽科技股份有限公司 / YOSONIC TECHNOLOGY CO., LTD.)

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(廣東省東莞市黃江鎭黃牛埔福祥街2號 / NO. 2, FUXIANG STREET, HUANGNIUPU, HUANGJIANG TOWN, DONGGUAN, GUANGDONG)

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result) No.1
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		-	n.d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n.d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n.d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg	參考IEC 62321: 2008方法,以氣相層析/質 譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	5	n.d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n.d.
五溴哪苯醚 / Pentabromodiphenyl ether	mg/kg		5	n.d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n.d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n.d.
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n.d.
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n.d.
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n.d.
鹵素 / Halogen				
鹵素 (氟) / Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分 析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
鹵素(氯)/ Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg		50	n.d.
鹵素(溴)/ Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n.d.

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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 6 of 12

Test Report

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備註(Note):

- 1. mg/kg = ppm; 0.1wt% = 1000ppm
- 2. n.d. = Not Detected (未檢出)
- 3. MDL = Method Detection Limit (方法偵測極限值)
- 4. "-" = Not Regulated (無規格値)
- 5. 樣品的測試是基於申請人要求混合測試,報告中的混合測試結果不代表其中個别單一材質的含量. (The samples was/were analyzed on behalf of the applicant as mixing sample in one testing. The above results was/were only given as the informality value.)

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號碼(No.) : CE/2013/C5949 日期(Date) : 2014/01/07 頁數(Page) : 7 of 12

Test Report

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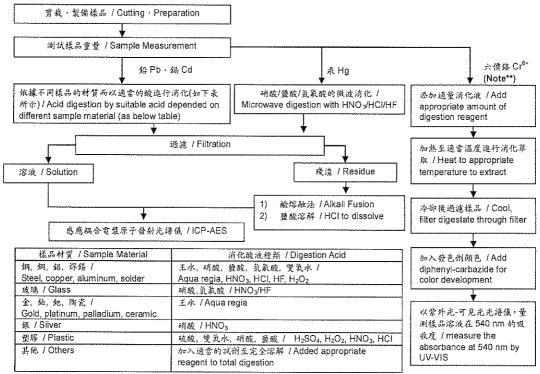
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1) 根據以下的流程圈之條件,樣品已完全溶解。(六價錄測試方法除外) / These samples were

dissolved totally by pre-conditioning method according to below flow chart. (Cr⁵⁺ test method excluded) 2) 测试人员: 接珍体 / Name of the person who made measurement: Climburgat Yang

- 2) 测试人员:将登健 / Name of the person who made measurement: Climbgreat Yang
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



Note** (For IEC 62321)

(1) 針射非金易材料加入檢性消化液, 加熱至 90~95℃ 萃取. / For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(2) 針針金屬材料加入純水, 加熱至沸腾萃取. / For metallic material, add pure water and heat to boiling.

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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 8 of 12

Test Report

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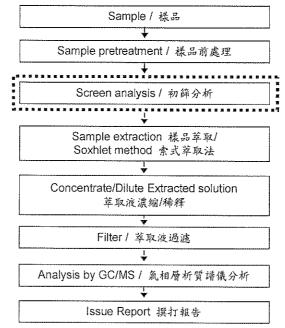
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

测試人員:翁賜彬 / Name of the person who made measurement: Roman Wong

■ 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang

選擇性篩檢程序 / Optional screen process = = = = = = = =

確認程序 / Confirmation process - · - ·▶



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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 9 of 12

Test Report

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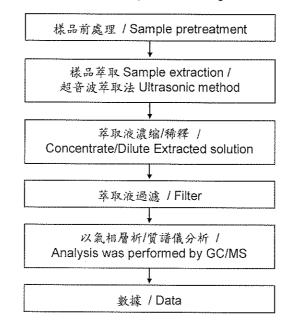
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六溴環十二烷分析流程圖 / HBCDD analytical flow chart

- 測試人員:翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 10 of 12

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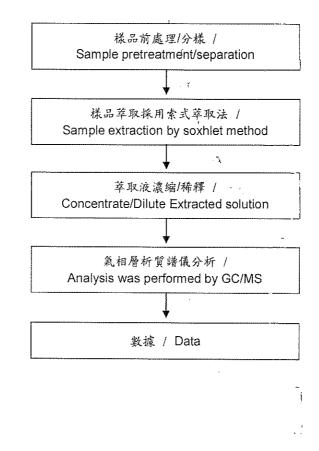
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 测試人員:翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 11 of 12

Test Report

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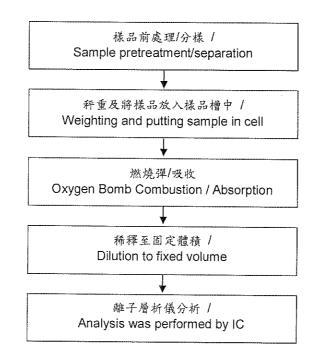
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鹵素分析流程圖 / Analytical flow chart of halogen content

■ 測試人員:陳恩臻 / Name of the person who made measurement: Rita Chen

■ 测試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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號碼(No.): CE/2013/C5949 日期(Date): 2014/01/07 頁數(Page): 12 of 12

Test Report

西北臺慶科技股份有限公司 / TAI-TECH ADVANCED ELECTRONICS CO., LTD.

(東莞臺慶精密電子有限公司 / TAI-TECH ADVANCED ELECTRONICS (DONGGUAN) CO. LTD.)

(臺慶精密電子(昆山)有限公司 / TAI-TECH ADVANCED ELECTRONICS (KUN-SHAN) CO. LTD.)

(耀鑽科技股份有限公司 / YOSONIC TECHNOLOGY CO., LTD.)

桃園縣楊梅市幼獅工業區幼四路1號 / NO. 1, YOU 4TH ROAD, YOUTH INDUSTRIAL DISTRICT, YANG-MEI CITY, TAO-YUAN HSIEN. TAIWAN R. O. C.

(廣東省東莞市黄江鎮黄牛埔福祥街2號 / NO. 2, FUXIANG STREET, HUANGNIUPU, HUANGJIANG TOWN, DONGGUAN, GUANGDONG)

(江蘇省昆山市篷朗昆嘉高科技工業區郭澤路 / GUO-ZE ROAD, KUNJIA HI-TECH INDUSTRIAL PARK, KUN-SHAN, JIANG-SU, CHINA)

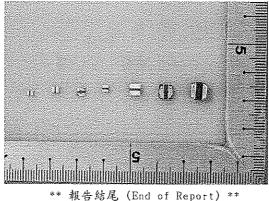
(桃園縣中壢市中壢工業區長春六路15號 / NO. 15, CHANGCHUN 6TH RD., JHONGLI CITY, TAOYUAN COUNTY 320, TAIWAN (R. O. C.))

* 照片中如有箭頭標示,則表示為實際檢測之樣品/部位. *

(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2013/C5949

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